



PIER Energy-Related Environmental Research

Environmental Impacts of Energy Generation, Distribution and Use

Converting Historical Vegetation Maps to a Geographical Information System

Contract #: 500-02-004-WA, MR-035-02

Contractor: University of California, Davis

Grant Amount: \$75,000

Contractor Project Managers: Drs. Susan Harrison and James Thorne

Commission Project Manager: Gina Barkalow

Commission Contract Manager: Mike Magaletti

The Issue

To maintain California's natural resources in good condition, resource managers need to know historic vegetation conditions in order to assess the level of change that has occurred. The Wieslander Vegetation Project—a decade-long effort by the U.S. Forest Service in the 1930s—mapped about one-third of the state's vegetation, providing detailed botanical data for more than 12,000 vegetation plots along with more than 3,000 landscape photos.¹

The Wieslander maps have recently been inventoried and identified as suitable for conversion to a geographic information system (GIS). Digital conversion will enable these valuable data sources to be used for various purposes—including refinement of models for forecasting the impacts of climate change.

Project Description

This project will digitize a series of the vegetation maps that start in the Central Valley and extend to the east side of the Sierra Nevada at Yosemite National Park (Figure 2). These maps represent the best historical view of the extent of different vegetation in California.

The historic distribution of vegetation is of interest to a wide variety of resource management groups, including water and energy managers who rely on such information to develop infrastructure planning scenarios. Researchers modeling the impacts of climate change will particularly benefit from the digitized Wieslander data: By calibrating the models to conditions that existed in the 1930s and comparing model predictions for the current time with today's actual conditions, researchers can validate models of ecosystem response to climate change. Specifically, the Wieslander data will be useful for the PIER-supported BIOMOVE plant dispersal model, the dynamic vegetation models being developed by Conservation International,

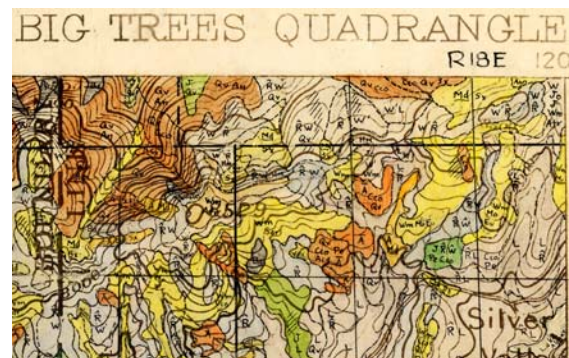


Figure 1. Example of detail in vegetation maps under development for this project

¹ See <http://vtm.berkeley.edu>.

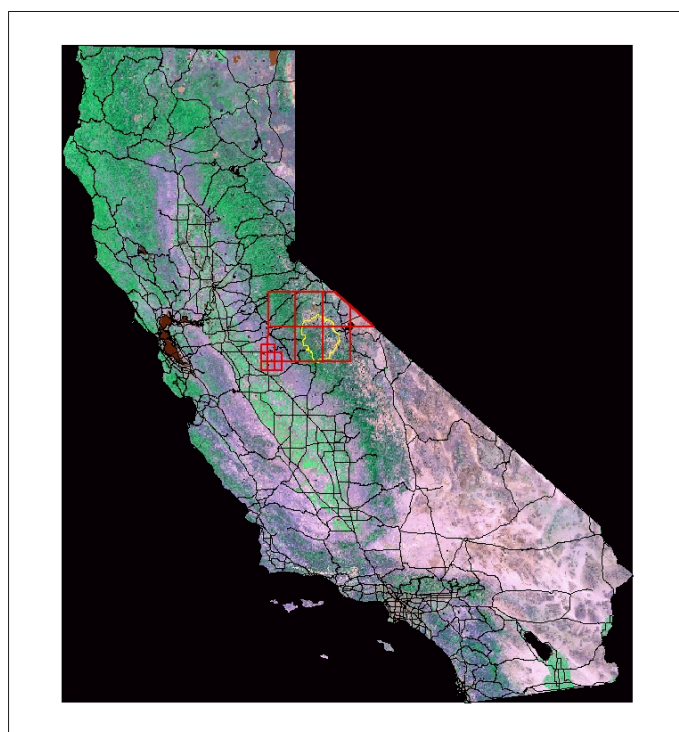


Figure 1.
Location of historic vegetation
maps under development
for this PIER project

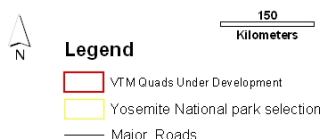


Figure 2. This project will digitize Wieslander maps that include Yosemite National Park and portions of the Central Valley.

responses to global climate change. The digitized, GIS-compatible vegetation data developed in this project will enable refinement of climate change models, improving their accuracy—and thus enable a better-informed response to global climate change.

Final Report

PIER-EA staff intend to post the final report on the Energy Commission website in spring 2006 and will list the website link here.

Contact

Gina Barkalow • 916-654-4057 • Gbarkalo@energy.state.ca.us

and a study of the impacts of climate change on vertebrate diversity being conducted by the Berkeley Museum of Vertebrate Zoology, among other efforts.

The successful completion of this project will likely have high visibility (it includes Yosemite National Park) and will spur development of the complete data set, a legacy that Californians developed over 70 years ago.

PIER Program Objectives and Anticipated Benefits for California

This project offers numerous benefits and meets the following PIER program objective:

- **Reducing the environmental impacts of electricity generation.** Power generation is a major source of greenhouse gas emissions; consequently, the California Energy Commission is sponsoring climate change impact analyses. Such analyses will provide policy makers with solid science to inform their